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Appendix D Nozzle Postfire Data

Final Postflight Hardware Evaluation Report RSRM-29 (STS-54)

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

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Thiokol CORPORATION
SPACE OPERATIONS

P.O. Box 707, Brigham City, Utah 84302-0707 (801) 863-3511

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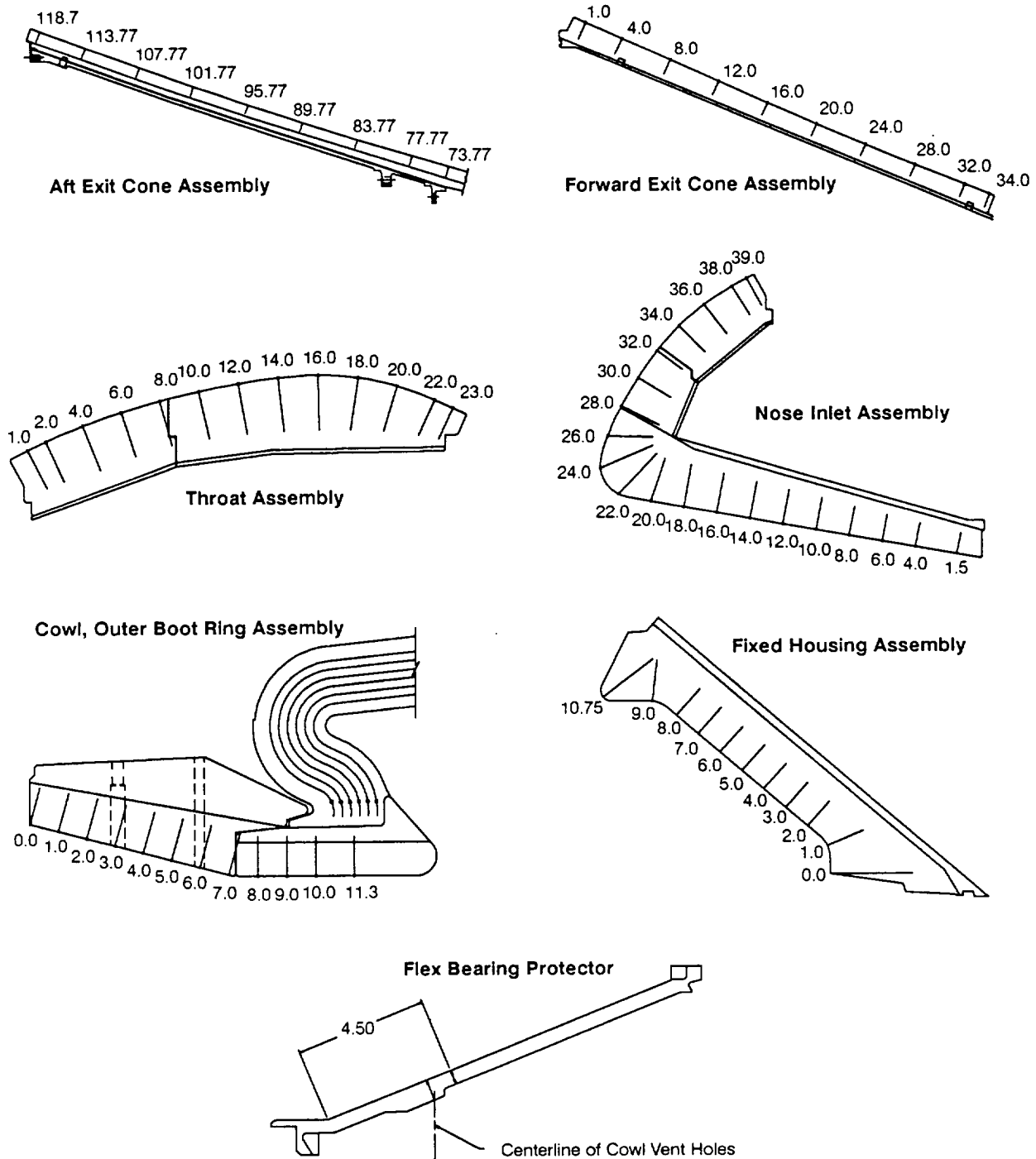


Figure 1
Nozzle Liner Char and Erosion Station Locations

Table D-I. RSRM-29A Forward Exit Cone Char and Erosion Data

Angular Location	Stations											
0 degrees	1.0	4.0	4.6	8.0	12.0	16.0	20.0	24.0	28.0	32.0	32.9	34.0
Measured Erosion	0.39	0.42	0.39	0.37	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	0.65	0.65	0.67	0.68	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	0.52	0.52	0.54	0.54	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	1.31	1.36	1.12	1.31	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	1.328	1.372	1.127	1.408
Margin of Safety	0.38	0.27	0.26	0.24	NA	NA	NA	NA	NA	NA	NA	NA
90 degrees												
Measured Erosion	0.40	0.41	0.37	0.32	NA	NA	NA	NA	NA	0.22	0.22	0.17
Measured Char	0.63	0.62	0.64	0.66	NA	NA	NA	NA	NA	0.65	0.61	0.62
Adjusted Char *	0.50	0.50	0.51	0.53	NA	NA	NA	NA	NA	0.52	0.49	0.50
Denominator	1.31	1.32	1.07	1.20	NA	NA	NA	NA	NA	1.02	0.82	0.91
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	1.328	1.372	1.127	1.408
Margin of Safety	0.38	0.31	0.32	0.35	NA	NA	NA	NA	NA	0.34	0.38	0.55
180 degrees												
Measured Erosion	0.44	0.40	0.40	0.39	NA	NA	NA	NA	0.24	0.25	0.19	0.11
Measured Char	0.65	0.63	0.64	0.63	NA	NA	NA	NA	0.64	0.56	0.62	0.69
Adjusted Char *	0.52	0.50	0.51	0.50	NA	NA	NA	NA	0.51	0.45	0.50	0.55
Denominator	1.40	1.31	1.11	1.29	NA	NA	NA	NA	1.05	0.99	0.78	0.88
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	1.328	1.372	1.127	1.408
Margin of Safety	0.29	0.32	0.27	0.26	NA	NA	NA	NA	0.27	0.39	0.44	0.61
270 degrees												
Measured Erosion	0.41	0.39	0.43	0.32	NA	NA	NA	NA	0.24	0.19	0.15	0.16
Measured Char	0.66	0.77	0.67	0.77	NA	NA	NA	NA	0.69	0.70	0.75	0.70
Adjusted Char *	0.53	0.62	0.54	0.62	NA	NA	NA	NA	0.55	0.56	0.60	0.56
Denominator	1.36	1.43	1.18	1.31	NA	NA	NA	NA	1.10	1.02	0.83	0.97
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	1.328	1.372	1.127	1.408
Margin of Safety	0.33	0.21	0.19	0.24	NA	NA	NA	NA	0.21	0.34	0.37	0.45

Minimum margin of safety is 0.19 at station 4.60 degree 270.00

Maximum margin of safety is 0.61 at station 34.00 degree 180.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

Table D-II. RSRM-29B Forward Exit Cone Char and Erosion Data

Angular Location	Stations											
	1.0	4.0	4.6	8.0	12.0	16.0	20.0	24.0	28.0	32.0	32.9	34.0
90 degrees												
Measured Erosion	0.37	0.33	0.32	0.31	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	0.71	0.69	0.70	0.74	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	0.57	0.55	0.56	0.59	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	1.34	1.25	1.04	1.27	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	NA	1.372	1.127	1.408
Margin of Safety	0.35	0.38	0.36	0.29	NA	NA	NA	NA	NA	NA	NA	NA
180 degrees												
Measured Erosion	0.39	0.35	0.34	0.34	NA	NA	NA	NA	NA	0.15	0.19	0.19
Measured Char	0.67	0.72	0.74	0.68	NA	NA	NA	NA	NA	0.71	0.66	0.69
Adjusted Char *	0.54	0.58	0.59	0.54	NA	NA	NA	NA	NA	0.57	0.53	0.55
Denominator	1.33	1.31	1.10	1.26	NA	NA	NA	NA	NA	0.96	0.81	1.01
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	NA	1.372	1.127	1.408
Margin of Safety	0.36	0.32	0.28	0.29	NA	NA	NA	NA	NA	0.42	0.39	0.39
270 degrees												
Measured Erosion	0.41	0.36	0.35	0.34	NA	NA	NA	NA	NA	0.19	0.19	0.19
Measured Char	0.67	0.70	0.71	0.68	NA	NA	NA	NA	NA	0.68	0.62	0.65
Adjusted Char *	0.54	0.56	0.57	0.54	NA	NA	NA	NA	NA	0.54	0.50	0.52
Denominator	1.37	1.31	1.09	1.26	NA	NA	NA	NA	NA	1.00	0.78	0.97
RSRM Liner Thickness	1.807	1.731	1.411	1.629	NA	NA	NA	NA	NA	1.372	1.127	1.408
Margin of Safety	0.32	0.32	0.29	0.29	NA	NA	NA	NA	NA	0.37	0.44	0.45

Minimum margin of safety is 0.28 at station 4.60 degree 180.00
Maximum margin of safety is 0.45 at station 34.00 degree 270.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}^*}$ - 1

Table D-III. RSRM-29A Throat Assembly Char and Erosion Data

Angular Location	Stations												
	1.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	23.0
0 degrees													
Measured Erosion	1.09	1.14	1.17	1.21	1.29	1.24	1.20	1.20	1.14	0.99	0.77	0.57	0.45
Measured Char	0.59	0.57	0.60	0.67	0.56	0.55	0.57	0.53	0.57	0.56	0.62	0.71	0.77
Adjusted Char *	0.44	0.43	0.45	0.50	0.42	0.41	0.43	0.40	0.43	0.45	0.50	0.57	0.62
Denominator	2.73	2.81	2.90	3.05	3.10	3.00	2.93	2.90	2.81	2.54	2.16	1.85	1.67
RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.16	0.15	0.14	0.08	0.03	0.13	0.20	0.25	0.32	0.41	0.50	0.40	0.26
90 degrees													
Measured Erosion	1.08	1.09	1.14	1.19	1.22	1.19	1.13	1.10	1.04	0.91	0.68	0.48	0.43
Measured Char	0.59	0.58	0.62	0.60	0.58	0.46	0.46	0.48	0.48	0.55	0.66	0.73	0.76
Adjusted Char *	0.44	0.43	0.47	0.45	0.43	0.35	0.35	0.36	0.36	0.44	0.53	0.58	0.61
Denominator	2.71	2.72	2.86	2.94	2.98	2.81	2.69	2.65	2.53	2.37	2.02	1.69	1.62
RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.17	0.19	0.16	0.11	0.07	0.21	0.31	0.37	0.47	0.51	0.60	0.53	0.30
180 degrees													
Measured Erosion	1.06	1.09	1.16	1.19	1.26	1.21	1.18	1.17	1.06	0.92	0.76	0.53	0.43
Measured Char	0.47	0.54	0.57	0.62	0.47	0.48	0.54	0.53	0.57	0.66	0.61	0.77	0.71
Adjusted Char *	0.35	0.41	0.43	0.47	0.35	0.36	0.41	0.40	0.43	0.53	0.49	0.62	0.57
Denominator	2.56	2.69	2.85	2.96	2.96	2.87	2.87	2.84	2.65	2.50	2.13	1.83	1.57
RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.24	0.21	0.16	0.11	0.08	0.18	0.23	0.28	0.40	0.43	0.52	0.41	0.34
270 degrees													
Measured Erosion	1.06	1.09	1.16	1.23	1.28	1.21	1.18	1.18	1.10	0.98	0.74	0.53	0.48
Measured Char	0.58	0.59	0.57	0.57	0.51	0.54	0.59	0.51	0.53	0.62	0.63	0.68	0.66
Adjusted Char *	0.43	0.44	0.43	0.43	0.38	0.41	0.44	0.38	0.40	0.50	0.50	0.54	0.53
Denominator	2.66	2.73	2.85	2.99	3.04	2.93	2.91	2.84	2.70	2.58	2.11	1.74	1.62
RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.19	0.19	0.16	0.10	0.05	0.16	0.21	0.28	0.38	0.39	0.53	0.48	0.30

Minimum margin of safety is 0.03 at station 8.00 degree 0.00
Maximum margin of safety is 0.60 at station 20.00 degree 90.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}^*}$ - 1

Table D-IV. RSRM-29B Throat Assembly Char and Erosion Data

Angular Location	Stations													
	0 degrees	1.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	23.0
Measured Erosion	1.06	1.09	1.13	1.17	1.19	1.19	1.19	1.15	1.14	1.09	0.99	0.81	0.56	0.45
	0.65	0.67	0.68	0.66	0.58	0.58	0.60	0.56	0.55	0.55	0.56	0.61	0.67	0.75
	0.49	0.50	0.51	0.50	0.43	0.43	0.45	0.42	0.41	0.41	0.45	0.49	0.54	0.60
	2.73	2.81	2.90	2.96	2.92	2.92	2.94	2.82	2.80	2.70	2.54	2.23	1.79	1.65
	3.174	3.247	3.314	3.280	3.183	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
	0.16	0.16	0.14	0.11	0.09	0.09	0.15	0.24	0.30	0.38	0.41	0.45	0.44	0.28
90 degrees														
	Measured Erosion	1.06	1.07	1.14	1.18	1.19	1.19	1.16	1.13	1.08	0.97	0.84	0.54	0.46
	Measured Char	0.72	0.75	0.67	0.69	0.62	0.61	0.62	0.65	0.68	0.66	0.59	0.70	0.74
	Adjusted Char *	0.54	0.56	0.50	0.52	0.47	0.46	0.47	0.49	0.51	0.53	0.47	0.56	0.59
	Denominator	2.80	2.84	2.91	3.01	2.96	2.95	2.90	2.87	2.80	2.60	2.27	1.78	1.66
	RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.14	0.14	0.14	0.09	0.07	0.07	0.15	0.21	0.26	0.33	0.38	0.42	0.45	0.27
180 degrees														
	Measured Erosion	1.10	1.12	1.16	1.19	1.19	1.18	1.16	1.15	0.99	0.98	0.81	0.53	0.46
	Measured Char	0.57	0.57	0.64	0.64	0.56	0.53	0.53	0.53	0.69	0.63	0.67	0.70	0.70
	Adjusted Char *	0.43	0.43	0.48	0.48	0.42	0.40	0.40	0.40	0.52	0.50	0.54	0.56	0.56
	Denominator	2.73	2.77	2.92	2.98	2.90	2.86	2.82	2.80	2.63	2.59	2.29	1.76	1.62
	RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.16	0.17	0.13	0.10	0.10	0.10	0.19	0.25	0.30	0.41	0.38	0.41	0.47	0.30
270 degrees														
	Measured Erosion	1.06	1.13	1.17	1.21	1.23	1.21	1.18	1.15	1.00	0.96	0.78	0.56	0.42
	Measured Char	0.53	0.51	0.64	0.64	0.55	0.50	0.57	0.59	0.68	0.64	0.66	0.63	0.68
	Adjusted Char *	0.40	0.38	0.48	0.48	0.41	0.38	0.43	0.44	0.51	0.51	0.53	0.50	0.54
	Denominator	2.62	2.74	2.94	3.02	2.98	2.89	2.89	2.85	2.64	2.56	2.22	1.75	1.52
	RSRM Liner Thickness	3.174	3.247	3.314	3.280	3.183	3.397	3.517	3.626	3.710	3.586	3.231	2.583	2.110
Margin of Safety	0.21	0.19	0.13	0.09	0.07	0.07	0.18	0.22	0.27	0.41	0.40	0.46	0.48	0.39

Minimum margin of safety is 0.07 at station 8.00 degree 270.00
Maximum margin of safety is 0.48 at station 22.00 degree 270.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

Table D-V. RSRM-29A Nose Inlet Assembly Char and Erosion Data

Angular Location	Stations												
	1.5	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0
0 degrees													
Measured Erosion	NA	0.42	0.41	0.47	0.49	0.59	0.67	0.76	0.94	1.23	1.78	1.92	1.36
Measured Char	NA	0.48	0.53	0.56	0.54	0.52	0.45	0.47	0.52	0.50	0.64	0.67	0.64
Adjusted Char *	NA	0.38	0.42	0.45	0.43	0.42	0.36	0.38	0.42	0.40	0.51	0.54	0.48
Denominator	NA	1.32	1.35	1.50	1.52	1.70	1.79	1.99	2.40	2.96	4.20	4.51	3.32
RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
Margin of Safety	NA	0.54	0.67	0.64	0.76	0.69	0.73	0.66	0.46	0.37	0.12	0.04	0.16
90 degrees													
Measured Erosion	NA	0.34	0.35	0.42	0.44	0.47	0.49	0.60	0.74	1.08	1.54	1.68	1.18
Measured Char	NA	0.56	0.55	0.50	0.46	0.49	0.48	0.47	0.36	0.33	0.63	0.71	0.74
Adjusted Char *	NA	0.45	0.44	0.40	0.37	0.39	0.38	0.38	0.29	0.26	0.50	0.57	0.56
Denominator	NA	1.24	1.25	1.34	1.34	1.43	1.46	1.67	1.84	2.49	3.71	4.07	3.05
RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
Margin of Safety	NA	0.64	0.80	0.83	0.99	1.01	1.12	0.97	0.91	0.63	0.27	0.15	0.27
180 degrees													
Measured Erosion	NA	0.32	0.32	0.39	0.41	0.51	0.53	0.63	0.81	0.99	1.37	1.54	1.08
Measured Char	NA	0.54	0.52	0.53	0.55	0.49	0.47	0.45	0.47	0.45	0.61	0.72	0.76
Adjusted Char *	NA	0.43	0.42	0.42	0.44	0.39	0.38	0.36	0.38	0.36	0.49	0.58	0.57
Denominator	NA	1.18	1.16	1.31	1.37	1.51	1.53	1.71	2.09	2.43	3.35	3.80	2.87
RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
Margin of Safety	NA	0.73	0.94	0.88	0.95	0.91	1.02	0.93	0.68	0.67	0.41	0.23	0.34
270 degrees													
Measured Erosion	NA	0.39	0.41	0.43	0.47	0.55	0.59	0.70	0.88	1.07	1.61	1.83	1.29
Measured Char	NA	0.52	0.57	0.51	0.47	0.46	0.43	0.42	0.50	0.49	0.74	0.65	0.70
Adjusted Char *	NA	0.42	0.46	0.41	0.38	0.37	0.34	0.34	0.40	0.39	0.59	0.52	0.53
Denominator	NA	1.30	1.39	1.37	1.41	1.56	1.61	1.82	2.26	2.63	3.96	4.31	3.24
RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
Margin of Safety	NA	0.57	0.62	0.79	0.89	0.84	0.92	0.81	0.55	0.54	0.19	0.09	0.19

Minimum margin of safety is 0.04 at station 24.00 degree 0.00
Maximum margin of safety is 1.12 at station 14.00 degree 90.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{Minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

Table D-VI. RSRM-29A Forward Nose Ring & Aft Inlet Ring
Char and Erosion Data

Angular Location	Stations						
	0 degrees	28.0	30.0	32.0	34.0	36.0	38.0 39.0
Measured Erosion		1.15	0.94	0.95	0.87	0.91	0.98 1.04
Measured Char		0.68	0.69	0.61	0.57	0.59	0.64 0.66
Adjusted Char *		0.51	0.52	0.46	0.43	0.44	0.48 0.50
Denominator		2.94	2.53	2.47	2.27	2.37	2.56 2.70
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.19	0.29	0.19	0.40	0.35	0.18 0.11
90 degrees							
Measured Erosion		1.07	0.91	0.90	0.84	0.89	0.95 0.98
Measured Char		0.68	0.78	0.71	0.62	0.57	0.57 0.63
Adjusted Char *		0.51	0.59	0.53	0.47	0.43	0.43 0.47
Denominator		2.78	2.55	2.47	2.26	2.31	2.43 2.55
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.26	0.27	0.20	0.41	0.38	0.24 0.18
180 degrees							
Measured Erosion		1.04	0.87	0.89	0.82	0.87	0.94 0.96
Measured Char		0.74	0.69	0.68	0.56	0.56	0.53 0.62
Adjusted Char *		0.56	0.52	0.51	0.42	0.42	0.40 0.47
Denominator		2.77	2.39	2.42	2.17	2.27	2.38 2.50
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.26	0.36	0.22	0.47	0.41	0.27 0.20
270 degrees							
Measured Erosion		1.18	0.96	1.00	0.90	0.95	1.01 1.03
Measured Char		0.65	0.69	0.61	0.50	0.56	0.56 0.65
Adjusted Char *		0.49	0.52	0.46	0.38	0.42	0.42 0.49
Denominator		2.97	2.57	2.57	2.27	2.42	2.54 2.67
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.18	0.27	0.15	0.40	0.32	0.19 0.12

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{Minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}^*}$ - 1

Table D-VII. RSRM-29B Nose Inlet Assembly Char and Erosion Data

Angular Location		Stations												
0	degrees	1.5	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0
Measured Erosion	Measured Erosion	NA	0.34	0.35	0.43	0.47	0.53	0.62	0.68	0.82	1.02	1.52	1.68	1.19
	Measured Char	NA	0.49	0.53	0.51	0.49	0.46	0.41	0.47	0.46	0.40	0.56	0.61	0.70
	Adjusted Char *	NA	0.39	0.42	0.41	0.39	0.37	0.33	0.38	0.37	0.32	0.45	0.49	0.53
	Denominator	NA	1.17	1.23	1.37	1.43	1.52	1.65	1.83	2.10	2.44	3.60	3.97	3.04
	RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
	Margin of Safety	NA	0.74	0.83	0.79	0.87	0.89	0.87	0.80	0.67	0.66	0.31	0.18	0.27
90	degrees													
	Measured Erosion	NA	0.36	0.35	0.41	0.43	0.51	0.58	0.67	0.75	0.97	1.45	1.64	1.18
	Measured Char	NA	0.57	0.60	0.51	0.50	0.52	0.52	0.47	0.46	0.50	0.67	0.73	0.69
	Adjusted Char *	NA	0.46	0.48	0.41	0.40	0.42	0.42	0.38	0.37	0.40	0.54	0.58	0.52
	Denominator	NA	1.29	1.30	1.33	1.36	1.54	1.68	1.81	1.96	2.44	3.57	4.01	3.01
	RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
	Margin of Safety	NA	0.58	0.73	0.85	0.96	0.87	0.84	0.82	0.79	0.66	0.32	0.17	0.28
180	degrees													
	Measured Erosion	NA	0.39	0.44	0.46	0.54	0.59	0.71	0.75	0.90	1.18	1.72	1.85	1.19
	Measured Char	NA	0.51	0.51	0.50	0.46	0.45	0.39	0.41	0.46	0.37	0.51	0.61	0.68
	Adjusted Char *	NA	0.41	0.41	0.40	0.37	0.36	0.31	0.33	0.37	0.41	0.49	0.49	0.51
	Denominator	NA	1.29	1.39	1.42	1.54	1.63	1.81	1.91	2.26	2.73	3.95	4.31	3.02
	RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
	Margin of Safety	NA	0.58	0.62	0.73	0.73	0.77	0.71	0.73	0.55	0.49	0.19	0.09	0.28
270	degrees													
	Measured Erosion	NA	0.40	0.39	0.46	0.48	0.55	0.64	0.72	0.83	1.06	1.59	1.76	1.29
	Measured Char	NA	0.44	0.46	0.44	0.48	0.45	0.42	0.46	0.40	0.39	0.57	0.74	0.76
	Adjusted Char *	NA	0.35	0.37	0.35	0.38	0.36	0.34	0.37	0.32	0.31	0.46	0.59	0.57
	Denominator	NA	1.24	1.24	1.36	1.44	1.55	1.70	1.90	2.06	2.51	3.75	4.26	3.29
	RSRM Liner Thickness	NA	2.038	2.248	2.458	2.668	2.878	3.088	3.298	3.507	4.055	4.713	4.691	3.863
	Margin of Safety	NA	0.64	0.81	0.81	0.85	0.86	0.82	0.74	0.70	0.62	0.26	0.10	0.17

Minimum margin of safety is 0.09 at station 24.00 degree 180.00
Maximum margin of safety is 0.96 at station 10.00 degree 90.00

* Measured char adjusted to end of action time

$$\text{Margin of Safety} = \frac{\text{minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}} - 1$$

Table D-VIII. RSRM-29B Forward Nose Ring & Aft Inlet Ring
Char and Erosion Data

Angular Location	Stations						
	0 degrees	28.0	30.0	32.0	34.0	36.0	38.0 39.0
Measured Erosion		1.15	0.92	0.98	0.89	0.91	0.95 0.97
Measured Char		0.69	0.63	0.59	0.58	0.59	0.60 0.67
Adjusted Char *		0.52	0.47	0.44	0.43	0.44	0.45 0.50
Denominator		2.95	2.43	2.51	2.32	2.37	2.46 2.57
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.19	0.34	0.17	0.37	0.35	0.23 0.17
90 degrees							
Measured Erosion		1.08	0.92	0.95	0.99	0.99	0.98 1.01
Measured Char		0.73	0.63	0.62	0.48	0.53	0.51 0.62
Adjusted Char *		0.55	0.47	0.47	0.36	0.40	0.38 0.47
Denominator		2.84	2.43	2.48	2.43	2.48	2.44 2.60
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.23	0.34	0.19	0.31	0.29	0.24 0.15
180 degrees							
Measured Erosion		1.12	0.98	1.01	0.94	0.97	1.01 1.04
Measured Char		0.59	0.63	0.60	0.56	0.55	0.61 0.59
Adjusted Char *		0.44	0.47	0.45	0.42	0.41	0.46 0.44
Denominator		2.79	2.55	2.58	2.40	2.46	2.59 2.63
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.26	0.27	0.14	0.32	0.30	0.17 0.14
270 degrees							
Measured Erosion		1.19	0.99	1.05	0.97	0.95	0.97 0.99
Measured Char		0.64	0.55	0.54	0.53	0.55	0.51 0.56
Adjusted Char *		0.48	0.41	0.41	0.40	0.41	0.38 0.42
Denominator		2.98	2.50	2.61	2.44	2.42	2.42 2.50
RSRM Liner Thickness		3.508	3.252	2.950	3.182	3.200	3.026 3.000
Margin of Safety		0.18	0.30	0.13	0.31	0.32	0.25 0.20

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

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Table D-IX. RSRM-29A Cowl/OBR Assembly Char and Erosion Data

Angular Location	Stations												
	0 degrees	0.3	1.0	2.0	3.0	4.0	5.0	6.0	6.8	8.0	9.0	10.0	11.3
Measured Erosion		0.32	0.38	0.42	0.45	0.43	0.44	0.38	0.32	0.08	0.09	0.15	0.24
Measured Char		0.56	0.54	0.56	0.62	0.60	0.62	0.70	0.73	0.94	0.91	0.88	0.82
Adjusted Char *		0.45	0.43	0.45	0.50	0.48	0.50	0.56	0.58	0.75	0.73	0.70	0.66
Denominator		1.20	1.30	1.40	1.52	1.46	1.50	1.41	1.36	1.25	1.23	1.28	1.34
RSRM Liner Thickness		1.438	1.499	1.577	1.655	1.733	1.811	1.889	1.943	1.600	1.674	1.687	1.703
Margin of Safety		0.20	0.15	0.13	0.09	0.19	0.21	0.34	0.43	0.28	0.36	0.32	0.27
90 degrees													
Measured Erosion		0.26	0.30	0.37	0.32	0.32	0.32	0.22	0.24	NA	0.12	0.09	0.07
Measured Char		0.57	0.55	0.58	0.63	0.61	0.70	0.74	0.83	NA	0.83	0.87	0.94
Adjusted Char *		0.46	0.44	0.46	0.50	0.49	0.56	0.59	0.66	NA	0.66	0.70	0.75
Denominator		1.09	1.15	1.32	1.27	1.25	1.34	1.22	1.36	NA	1.18	1.18	1.23
RSRM Liner Thickness		1.438	1.499	1.577	1.655	1.733	1.811	1.889	1.943	1.600	1.674	1.687	1.703
Margin of Safety		0.32	0.30	0.19	0.30	0.39	0.35	0.55	0.43	NA	0.42	0.43	0.38
180 degrees													
Measured Erosion		0.30	0.35	0.38	0.35	0.35	0.36	0.25	NA	0.08	0.09	0.12	0.16
Measured Char		0.52	0.53	0.54	0.63	0.66	0.68	0.79	NA	0.96	0.88	0.86	0.95
Adjusted Char *		0.42	0.42	0.43	0.50	0.53	0.54	0.63	NA	0.77	0.70	0.69	0.76
Denominator		1.12	1.23	1.30	1.33	1.36	1.40	1.32	NA	1.27	1.19	1.21	1.38
RSRM Liner Thickness		1.438	1.499	1.577	1.655	1.733	1.811	1.889	1.943	1.600	1.674	1.687	1.703
Margin of Safety		0.28	0.22	0.21	0.24	0.27	0.29	0.43	NA	0.26	0.41	0.39	0.23
270 degrees													
Measured Erosion		0.29	0.35	0.37	0.36	0.38	0.37	0.35	NA	NA	NA	0.06	0.08
Measured Char		0.59	0.54	0.56	0.61	0.57	0.60	0.61	NA	NA	NA	0.80	0.82
Adjusted Char *		0.47	0.43	0.45	0.49	0.46	0.48	0.49	NA	NA	NA	0.64	0.66
Denominator		1.17	1.24	1.30	1.33	1.33	1.34	1.26	NA	NA	NA	1.05	1.10
RSRM Liner Thickness		1.438	1.499	1.577	1.655	1.733	1.811	1.889	1.943	1.600	1.674	1.687	1.703
Margin of Safety		0.23	0.21	0.21	0.24	0.30	0.35	0.50	NA	NA	NA	0.61	0.54
Minimum margin of safety is 0.09 at station 3.00 degree 0.00													
Maximum margin of safety is 0.61 at station 10.00 degree 270.00													

Minimum margin of safety is 0.09 at station 3.00 degree 0.00
Maximum margin of safety is 0.61 at station 10.00 degree 270.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.50 \times \text{erosion} + 1.50 \times \text{adj char}}$ - 1

Table D-X. RSRM-29B Cowl/OBR Assembly Char and Erosion Data

Angular Location	Stations											
0 degrees	0.3	1.0	2.0	3.0	4.0	5.0	6.0	6.8	8.0	9.0	10.0	11.3
Measured Erosion	0.29	0.34	0.31	0.37	0.37	0.39	NA	NA	NA	0.08	0.11	0.18
Measured Char	0.52	0.51	0.61	0.61	0.59	0.59	NA	NA	NA	0.85	0.87	0.81
Adjusted Char *	0.42	0.41	0.49	0.49	0.47	0.47	NA	NA	NA	0.68	0.70	0.65
Denominator	1.10	1.19	1.23	1.35	1.33	1.37	NA	NA	NA	1.14	1.21	1.24
RSRM Liner Thickness	1.438	1.499	1.577	1.655	1.733	1.811	NA	NA	NA	1.674	1.687	1.703
Margin of Safety	0.31	0.26	0.28	0.23	0.30	0.32	NA	NA	NA	0.47	0.40	0.37
90 degrees												
Measured Erosion	0.23	0.26	0.31	0.30	0.34	NA	NA	NA	NA	0.06	0.05	0.07
Measured Char	0.57	0.62	0.54	0.54	0.58	NA	NA	NA	NA	0.87	0.88	0.98
Adjusted Char *	0.46	0.50	0.43	0.43	0.46	NA	NA	NA	NA	0.70	0.70	0.78
Denominator	1.03	1.14	1.16	1.14	1.26	NA	NA	NA	NA	1.13	1.13	1.28
RSRM Liner Thickness	1.438	1.499	1.577	1.655	1.733	1.811	NA	NA	NA	1.674	1.687	1.703
Margin of Safety	0.40	0.31	0.36	0.45	0.38	NA	NA	NA	NA	0.48	0.49	0.33
180 degrees												
Measured Erosion	0.24	0.30	0.34	0.39	0.35	NA	NA	NA	NA	0.09	0.08	0.06
Measured Char	0.54	0.53	0.50	0.47	0.50	NA	NA	NA	NA	0.84	0.82	0.90
Adjusted Char *	0.43	0.42	0.40	0.38	0.40	NA	NA	NA	NA	0.67	0.66	0.72
Denominator	1.02	1.13	1.18	1.25	1.20	NA	NA	NA	NA	1.14	1.10	1.17
RSRM Liner Thickness	1.438	1.499	1.577	1.655	1.733	1.811	NA	NA	NA	1.674	1.687	1.703
Margin of Safety	0.41	0.33	0.34	0.32	0.44	NA	NA	NA	NA	0.46	0.53	0.46
270 degrees												
Measured Erosion	0.27	0.29	0.33	0.34	0.29	NA	NA	NA	NA	0.04	0.03	0.09
Measured Char	0.54	0.56	0.60	0.59	0.68	NA	NA	NA	NA	0.84	0.86	0.87
Adjusted Char *	0.43	0.45	0.48	0.47	0.54	NA	NA	NA	NA	0.67	0.69	0.70
Denominator	1.08	1.14	1.26	1.27	1.26	NA	NA	NA	NA	1.07	1.08	1.18
RSRM Liner Thickness	1.438	1.499	1.577	1.655	1.733	1.811	NA	NA	NA	1.674	1.687	1.703
Margin of Safety	0.33	0.31	0.25	0.30	0.38	NA	NA	NA	NA	0.57	0.57	0.44
Minimum margin of safety is 0.23 at station 3.00 degree 0.00												
Maximum margin of safety is 0.57 at station 9.00 degree 270.00												

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.50 \times \text{erosion} + 1.50 \times \text{adj char}^*}$ - 1

Table D-XI. RSRM-29A Fixed Housing Insulation Char and Erosion Data

Angular Location	Stations										
0 degrees	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.75
Measured Erosion	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Measured Char	1.13	0.76	0.85	0.83	0.88	0.87	0.88	0.80	0.77	1.03	1.91
Adjusted Char *	0.90	0.61	0.68	0.66	0.70	0.70	0.70	0.64	0.62	0.82	1.53
Denominator	1.13	0.84	0.85	0.83	0.88	0.87	0.88	0.80	0.77	1.03	1.91
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	2.37	1.48	1.15	1.20	1.08	1.10	1.08	1.29	1.38	1.36	0.60
90 degrees											
Measured Erosion	0.14	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Measured Char	1.30	1.02	0.80	0.65	0.63	0.64	0.60	0.55	0.45	0.64	1.66
Adjusted Char *	1.04	0.82	0.64	0.52	0.50	0.51	0.48	0.44	0.36	0.51	1.33
Denominator	1.58	1.16	0.80	0.65	0.63	0.64	0.60	0.55	0.45	0.64	1.66
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	1.41	0.79	1.28	1.81	1.90	1.86	2.05	2.33	3.08	2.79	0.84
180 degrees											
Measured Erosion	0.07	0.08	0.07	0.08	0.09	0.08	0.04	0.00	0.00	0.00	0.15
Measured Char	1.42	1.01	0.87	0.87	0.90	0.84	0.86	0.88	0.83	0.90	1.77
Adjusted Char *	1.14	0.81	0.70	0.70	0.72	0.67	0.69	0.70	0.66	0.72	1.42
Denominator	1.56	1.17	1.01	1.03	1.08	1.00	0.94	0.88	0.83	0.90	2.07
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	1.44	0.78	0.81	0.77	0.69	0.83	0.95	1.08	1.21	1.70	0.47
270 degrees											
Measured Erosion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Measured Char	1.19	0.91	1.06	1.01	0.98	0.98	0.96	0.86	0.72	1.00	1.92
Adjusted Char *	0.95	0.73	0.85	0.81	0.78	0.78	0.77	0.69	0.58	0.80	1.54
Denominator	1.19	0.91	1.06	1.01	0.98	0.98	0.96	0.86	0.72	1.00	1.92
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	2.20	1.29	0.72	0.81	0.87	0.87	0.91	1.13	1.55	1.43	0.59

Minimum margin of safety is 0.47 at station 10.75 degree 180.00
Maximum margin of safety is 3.08 at station 8.00 degree 90.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{Minimum liner thickness}}{2.00 \text{ X erosion} + 1.25 \text{ X adj char}}$ * - 1

Table D-XII. RSRM-29B Fixed Housing Insulation Char and Erosion Data

Angular Location	Stations										
0 degrees	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.75
Measured Erosion	0.12	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.18
Measured Char	1.15	0.96	0.95	0.93	0.83	0.81	0.84	0.78	0.71	0.52	1.45
Adjusted Char *	0.92	0.77	0.76	0.74	0.66	0.65	0.67	0.62	0.57	0.42	1.16
Denominator	1.39	1.08	0.95	0.93	0.83	0.81	0.84	0.78	0.71	0.76	1.81
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	1.74	0.93	0.92	0.96	1.20	1.26	1.18	1.35	1.59	2.19	0.68
90 degrees											
Measured Erosion	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	NA
Measured Char	1.16	0.89	0.92	0.89	0.91	0.97	0.92	0.89	0.67	0.54	NA
Adjusted Char *	0.93	0.71	0.74	0.71	0.73	0.78	0.74	0.71	0.54	0.43	NA
Denominator	1.32	0.97	0.92	0.89	0.91	0.97	0.92	0.89	0.67	0.88	NA
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	1.88	1.15	0.98	1.05	1.01	0.89	0.99	1.06	1.74	1.76	NA
180 degrees											
Measured Erosion	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.24
Measured Char	0.95	0.94	0.96	0.96	0.95	0.93	0.97	0.91	0.81	0.74	1.39
Adjusted Char *	0.76	0.75	0.77	0.77	0.76	0.74	0.78	0.73	0.65	0.59	1.11
Denominator	1.15	1.14	0.96	0.96	0.95	0.93	0.97	0.91	0.81	0.86	1.87
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	2.31	0.83	0.90	0.90	0.93	0.97	0.89	1.02	1.27	1.82	0.63
270 degrees											
Measured Erosion	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
Measured Char	1.31	0.89	0.88	0.91	0.90	0.89	0.88	0.89	0.86	NA	NA
Adjusted Char *	1.05	0.71	0.70	0.73	0.72	0.71	0.70	0.71	0.69	NA	NA
Denominator	1.31	0.97	0.88	0.91	0.90	0.89	0.88	0.89	0.86	NA	NA
RSRM Liner Thickness	3.807	2.081	1.825	1.827	1.829	1.831	1.832	1.834	1.836	2.426	3.048
Margin of Safety	1.91	1.15	1.07	1.01	1.03	1.06	1.08	1.06	1.13	NA	NA

Minimum margin of safety is 0.63 at station 10.75 degree 180.00
Maximum margin of safety is 2.31 at station 0.00 degree 180.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{2.00 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

Table D-XIII. RSRM-29A Aft Exit Cone Assembly Char and Erosion Data

Angular Location	Stations										
	1.00	6.00	18.00	30.00	42.00	54.00	64.00	73.77	77.77	83.77	89.77
270 degrees											
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
280 degrees											
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
290 degrees											
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
300 degrees											
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
310 degrees											
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table D-XIII. RSRM-29A Aft Exit Cone Assembly Char and Erosion Data (CONT.)

Angular Location Stations

270 degrees 107.77 113.77 116.77

Measured Erosion 0.15 0.17 NA
 Measured Char 0.58 0.59 NA
 Adjusted Char * 0.49 0.50 NA
 Denominator 0.87 0.92 NA
 RSRM Liner Thickness 1.131 1.160 NA
 Margin of Safety 0.30 0.27 NA

280 degrees

Measured Erosion 0.17 0.17 NA
 Measured Char 0.52 0.54 NA
 Adjusted Char * 0.44 0.46 NA
 Denominator 0.84 0.86 NA
 RSRM Liner Thickness 1.131 1.160 NA
 Margin of Safety 0.34 0.34 NA

290 degrees

Measured Erosion 0.15 0.15 NA
 Measured Char 0.56 0.57 NA
 Adjusted Char * 0.48 0.48 NA
 Denominator 0.85 0.86 NA
 RSRM Liner Thickness 1.131 1.160 NA
 Margin of Safety 0.33 0.35 NA

300 degrees

Measured Erosion 0.15 0.17 NA
 Measured Char 0.57 0.54 NA
 Adjusted Char * 0.48 0.46 NA
 Denominator 0.86 0.86 NA
 RSRM Liner Thickness 1.131 1.160 NA
 Margin of Safety 0.31 0.34 NA

310 degrees

Measured Erosion 0.13 0.24 NA
 Measured Char 0.67 0.57 NA
 Adjusted Char * 0.57 0.48 NA
 Denominator 0.93 1.01 NA
 RSRM Liner Thickness 1.131 1.160 NA
 Margin of Safety 0.21 0.14 NA

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

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Table D-XIII. RSRM-29A Aft Exit Cone Assembly Char and Erosion Data (CONT.)

Minimum margin of safety is 0.14 at station 113.77 degree 310.00
 Maximum margin of safety is 0.38 at station 95.77 degree 270.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

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Table D-XIV. RSRM-29B Aft Exit Cone Assembly Char and Erosion Data

Angular Location	Stations									
	1.00	6.00	18.00	30.00	42.00	54.00	64.00	73.77	77.77	83.77
180 degrees										
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
190 degrees										
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
200 degrees										
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
210 degrees										
Measured Erosion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Measured Char	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Adjusted Char *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denominator	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RSRM Liner Thickness	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Margin of Safety	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Minimum margin of safety is 0.23 at station 113.77 degree 210.00
Maximum margin of safety is 0.55 at station 118.77 degree 200.00

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

Table D-XIV. RSRM-29B Aft Exit Cone Assembly Char and Erosion Data (CONT.)

Angular Location Stations

180 degrees 107.77 113.77 118.77

Measured Erosion 0.15 0.15 NA
 Measured Char 0.58 0.60 NA
 Adjusted Char * 0.49 0.51 NA
 Denominator 0.87 0.89 NA
 RSRM Liner Thickness 1.131 1.160 1.225
 Margin of Safety 0.30 0.30 NA

190 degrees

Measured Erosion 0.15 0.19 0.15
 Measured Char 0.56 0.57 0.64
 Adjusted Char * 0.48 0.48 0.54
 Denominator 0.85 0.93 0.94
 RSRM Liner Thickness 1.131 1.160 1.225
 Margin of Safety 0.33 0.25 0.31

200 degrees

Measured Erosion 0.16 0.17 0.14
 Measured Char 0.51 0.57 0.52
 Adjusted Char * 0.43 0.48 0.44
 Denominator 0.81 0.89 0.79
 RSRM Liner Thickness 1.131 1.160 1.225
 Margin of Safety 0.39 0.30 0.55

210 degrees

Measured Erosion 0.16 0.18 NA
 Measured Char 0.57 0.60 NA
 Adjusted Char * 0.48 0.51 NA
 Denominator 0.88 0.94 NA
 RSRM Liner Thickness 1.131 1.160 1.225
 Margin of Safety 0.29 0.23 NA

* Measured char adjusted to end of action time

Margin of Safety = $\frac{\text{minimum liner thickness}}{1.70 \times \text{erosion} + 1.25 \times \text{adj char}}$ - 1

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